

REMARKS

Currently pending claims 1-29 are for consideration by the Examiner.

The Examiner rejected claim 1 under 35 U.S.C. §103(a) as allegedly being unpatentable over Esch et al. (U.S. Patent No. 4,240,845) in view of AAPR (Applicants' admitted prior art as shown in at least figure 22 and specification pages 3-4) newly applied.

The Examiner rejected claims 2-29 under 35 U.S.C. §103(a) as allegedly being unpatentable over Esch as applied to claim 1 above, and further in view of Saenger et al. (U.S. Patent No. 5,633,781) further in view of AAPR (Applicants' admitted prior art as shown in at least figure 22 and specification pages) newly applied.

Applicants respectfully traverse the §103 rejections with the following arguments.

**35 U.S.C. §103(a): Claim 1**

The Examiner rejected claim 1 under 35 U.S.C. §103(a) as allegedly being unpatentable over Esch (U.S. Patent No. 4,240,845) in view of AAPR (Applicants' admitted prior art as shown in at least figure 22 and specification pages 3-4) newly applied.

The Examiner alleges: "With respect to claim 1 Esch describes a method for forming interconnect between a storage capacitor (Fig. 3F # 45, col. 15, line 44-45) and transfer device (metal line)(fig. 3M, metal word line) in a memory cell including:

"Forming a capacitor having a lip extending over the top (fig. 3 F-I, # 49, col. 15 line 50-52) and diffusing dopant from the lip into the top surface of the substrate forming a surface strap (Fig. 3G, col. 15 lines 53-64).

Esch does not specifically mention the surface strap providing a connection between the capacitor and the transfer device.

However AAPR fig.22 shows surface strap 11 connecting the capacitor 24 and the transfer device 14 to form straps that are self aligned with capacitor and the transfer device and to form memory cells with higher densities.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include AAPR's strap that connects the capacitor and the transfer device to form straps that are self aligned with capacitor and the transfer device and to form memory cells with higher densities."

Applicants respectfully contend that claim 1 is not unpatentable over Esch et al., because Esch in view of AAPR does not teach or suggest each and every feature of claim 1. For example,

Esch in view of AAPR does not teach or suggest "diffusing dopant from the lip into the top surface of the substrate, the diffusing dopant forming a surface strap in the substrate, the surface strap providing a connection between the capacitor and the transfer device" (emphasis added). Since the Examiner has identified the polysilicon layer 49 in Esch as comprising the lip of claim 1, the Examiner appears to consider the substrate in Esch as comprising the silicon substrate 39, the N+ regions 44 and 45, the silicon oxide layer 41, and the P.S.G. layer 46. Under the preceding assumption as to the definition of the substrate in Esch, the top surface of the substrate in Esch comprises the top surface of the P.S.G. layer 46 and the top surface of oxide layer 48, as shown in FIG. 3F of Esch. The polysilicon layer 49 surely extends over the top surface of the substrate as required by claim 1. The Examiner has identified FIG. 3G and col. 15, lines 53-64 as disclosing the "diffusing dopant" step of claim 1. Applicant respectfully contend, however, that col. 15, lines 53-64 of Esch discloses the doping of only the polysilicon layer 49. Col. 15, lines 53-64 of Esch does not disclose the dopant as being diffused into the top surface of the substrate as required by claim 1. Furthermore, col. 15, lines 53-64 of Esch does not disclose the diffusing dopant as forming a surface strap in the substrate as required by claim 1, especially in light of the fact that Esch does not disclose any dopant associated with FIG. 3G as diffusing into the substrate. Additionally, the Examiner has not identified the "surface strap" in Esch as being anything other than a doped portion of the polysilicon layer 49.

In addition, Applicants respectfully contend that there is no motivation to combine the AAPR with Esch to form a connection between the storage capacitor and the transfer device, because there is no need for such a connection in Esch. The N+ region 45 already is such a connection as clearly identified by the Examiner. To form such an extra unnecessary connection

rejection based on anticipation of Esch 2005/0125112  
 Esch col. 15 line 53-64  
 does not disclose doping with impurities  
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in Esch would not only be wasteful, but would also defeat the intent and methodology of the Esch invention. *W. H. H.*

Based on the preceding arguments, Applicants respectfully maintain that claim 1 is not unpatentable over Esch in view of AAPR, and that claim 1 is in condition for allowance.

**35 U.S.C. §103(a): Claim 2-29**

The Examiner rejected claims 2-29 under 35 U.S.C. §103(a) as allegedly being unpatentable over Esch (U.S. Patent No. 4,240,845) in view of Saenger (U.S. Patent No. 5,633,781) and further in view of AAPR (Applicants' admitted prior art as shown in at least figure 22 and specification pages) newly applied.

Since claims 2-16 depend from claim 1 which Applicants have argued *supra* to be patentable under 35 U.S.C. §103(a), Applicants respectfully maintain that claims 2-16 are likewise patentable and are in condition for allowance.

Applicants respectfully contend that claim 17 is not unpatentable over Esch in view of Saenger and further in view of AAPR over Esch et al. and further in view of Saenger, because Esch in view of Saenger and further in view of AAPR does not teach or suggest each and every feature of claim 17. For example, Esch in view of Saenger and further in view of AAPR does not teach or suggest "diffusing dopants from said capacitor fill material into said semiconductor substrate from said lip of capacitor fill material, the diffusing dopant forming a surface strap in the substrate, the surface strap providing a connection between the capacitor and the transfer device."

Applicants respectfully contend that claim 1 is not unpatentable over Esch et al., because Esch in view of AAPR does not teach or suggest each and every feature of claim 1. For example, Esch in view of AAPR does not teach or suggest "diffusing dopant from the lip into the top

surface of the substrate, the diffusing dopant forming a surface strap **in the substrate**, the surface strap providing a connection between the capacitor and the transfer device" (emphasis added). Since the Examiner has identified the polysilicon layer 49 in Esch as comprising the lip of claim 1, the Examiner appears to consider the substrate in Esch as comprising the silicon substrate 39, the N<sup>+</sup> regions 44 and 45, the silicon oxide layer 41, and the P.S.G. layer 46. Under the preceding assumption as to the definition of the substrate in Esch, the top surface of the substrate in Esch comprises the top surface of the P.S.G. layer 46 and the top surface of oxide layer 48, as shown in FIG. 3F of Esch. The polysilicon layer 49 surely extends over the top surface of the substrate as required by claim 1. The Examiner has identified FIG. 3G and col. 15, lines 53-64 as disclosing the "diffusing dopant" step of claim 1. Applicant respectfully contend, however, that col. 15, lines 53-64 of Esch discloses the doping of only the polysilicon layer 49. Col. 15, lines 53-64 of Esch does not disclose the dopant as being diffused **into the top surface of the substrate** as required by claim 1. Furthermore, col. 15, lines 53-64 of Esch does not disclose the diffusing dopant as forming a surface strap **in the substrate** as required by claim 1, especially in light of the fact that Esch does not disclose any dopant associated with FIG. 3G as diffusing into the substrate. Additionally, the Examiner has not identified the "surface strap" in Esch as being anything other than a doped portion of the polysilicon layer 49.

In addition, Applicants respectfully contend that there is no motivation to combine the AAPR with Esch to form a connection between the storage capacitor and the transfer device, because there is no need for such a connection in Esch. The N<sup>+</sup> region 45 already is such a connection as clearly identified by the Examiner. To form such an extra unnecessary connection in Esch would not only be wasteful, but would also defeat the intent and methodology of the

Esch invention.

Based on the preceding arguments, Applicants respectfully maintain that claim 17 is not unpatentable over Esch in view of Saenger and further in view of AAPR, and that claim 17 is in condition for allowance. Since claims 18-29 depend from claim 17, Applicants contend that claims 18-29 are likewise in condition for allowance.

CONCLUSION

Based on the preceding arguments, Applicants respectfully believe that all pending claims 1-29 and the entire application meet the acceptance criteria for allowance and therefore request favorable action. If the Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invites the Examiner to contact Applicants' representative at the telephone number listed below.

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